

Notice of Allowability

Application No.

10/056,017

Examiner

Zia R. Hashmi

Applicant(s)

NOVAK ET AL.

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/4/2004.
2. ☒ The allowed claim(s) is/are 1,3-10 and 12-20.
3. ☒ The drawings filed on 28 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Allowable Subject Matter

1. An "Amendment" was received on February 4, 2004 in response to Office Action of September 4, 2003. The specification and claims 4, 10 and 17-20 have been amended, as indicated, and claims 2 and 11 have been canceled, and a new claim 21 has been added.

2. Claims 1, 3-10 and 12-21 are allowed.

3. The following is an examiner's statement of reasons for allowance:

With respect to independent claims 1 and 13, prior art fails to disclose a lithography system, comprising: a reticle chamber containing a reticle stage component extending between portions of an optical system, the reticle chamber having an opening that provides direct access to the reticle stage within the reticle chamber so that the reticle stage can be accessed or removed through the the reticle chamber opening and from between portions of the optical system without disassembling the components of the optical system. Prior art also fails to disclose a reticle chamber having an angled opening with a maintenance panel which is removably mounted to the reticle chamber over the reticle chamber angled opening; an optical system for illuminating and projecting a source; a reticle stage having a reticle table, the reticle table positioned between components of the optical system and housed with the reticle stage within the reticle chamber, wherein the reticle chamber angled opening provides access to the reticle stage.

In the prior art of lithographic processes typically used to manufacture memory, logic and other types of semiconductor devices, accurately positioning the reticle on its stage by precise motion in all coordinates is important in the fabrication process. Conventional reticle stages suffer from a problem that external forces and/or small reaction forces adversely affect the performance of the stage, because such forces can cause vibration and body distortion, which highly affect the tracking error of the stage. Another feature to consider in a reticle stage is maximizing servo bandwidth because this results in faster response to correct and reduce errors caused by disturbances from the ideal position and velocity. Another desirable feature of lithography systems is the periodic access and removal of the reticle stage for maintenance such as cleaning, replacement and the like. This is very important due to the fact that the reticle is subject to heating, high currents and other erosive factors within the vacuum chamber.

In a first aspect of the invention, a lithography system has a reticle chamber having an opening. A maintenance panel is removably mounted to the reticle chamber opening. The reticle chamber maintenance panel may be pivotably mounted to the chamber and the opening may be at an angle such as, for example, between 0 and 45 degrees. A reticle stage is housed within the reticle chamber and is substantially accessible and removable through the reticle chamber opening. There are many other embodiments of the invention. For example, in one of the embodiments, the reticle chamber angled opening provides access to substantially a center of gravity of the reticle stage, and permits removal of the reticle stage without removing the optical system. The reticle stage may be removable from the reticle chamber via the reticle

chamber angled opening in a first direction which is in a plane substantially horizontal to the reticle table.

Claims 3-12 and 14-21 are allowed because of their dependencies on the independent claims 1 and 13.

Conclusion

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments of Statement of Reasons for Allowance".

4. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

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Zia Hashmi

March 27, 2004.


J. R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2000